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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,268	01/08/2002	Charles Leu		7873

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WEI TE CHUNG  
FOXCONN INTERNATIONAL, INC.  
1650 MEMOREX DRIVE  
SANTA CLARA, CA 95050

EXAMINER
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PRITCHETT, JOSHUA L

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 04/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/044,268

Applicant(s)

LEU ET AL.

Examiner

Joshua L Pritchett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty (US 6,215,592) in view of Mitsui (US 6,042,752).

Regarding claim 1, Pelekhaty teaches a thin film filter for dense wavelength division multiplexing, the filter comprising a glass substrate (200), a film stack on the glass substrate comprising low refractive index thin films (68) and high refractive index thin films (66). Pelekhaty lacks reference to the high refractive index thin film comprising indium tin oxide. Mitsui teaches the use of tin oxide including indium as a thin film light transmissive layer (col. 2 lines 27-29), and indium tin oxide is known to have a high refractive index. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the indium tin oxide film taught by Mitsui in the Pelekhaty invention for the purpose of having a film with low resistance to light transmission and high scratch resistance.

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Regarding claim 2, Pelekhaty teaches the substrate is made of glass (col. 11 line 19).

Regarding claim 3, Pelekhaty teaches the film stack comprising a plurality of cavities (Fig. 11).

Regarding claim 4, Pelekhaty teaches the cavities comprising a first group of mirror layers (194), a second group of mirror layers (176), a spacer layer (180, 182, 178) and a coupling layer (66). A coupling layer (24) is defined in the specification as being merely a low refractive index layer at the end of the film stack.

Regarding claim 5, Pelekhaty teaches the first and second groups of mirror layers comprise a plurality of low refractive index and high refractive index thin films (Fig. 11).

Regarding claim 7, Pelekhaty teaches the invention as claimed but lacks reference to claimed composition of the indium tin oxide layer. Mitsui teaches the claimed composition (col. 2 lines 38-40). Mitsui teaches the compound having an indium content being between 0.1 and 30 percent and a gallium content of 0.1-30 percent. Therefore the claimed range of 17-20 percent of indium oxide and 83-80 percent of tin oxide is taught by the anticipated by Mitsui. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the composition taught by Mitsui in the Pelekhaty invention for the purpose of having the thin film layer have low resistance to light transmission and a high resistance to scratching.

Regarding claim 9, Pelekhaty teaches the high and low refractive index materials alternating in the film stack (Fig. 11).

Regarding claim 10, Pelekhaty teaches the high and low refractive index thin films have an optical thickness of one-quarter wavelength (col. 6 lines 54-55).

Regarding claim 11, Pelekhaty teaches a thin film filter for dense wavelength division multiplexing, the filter comprising a glass substrate (200), a film stack on the glass substrate comprising low refractive index thin films (68) and high refractive index thin films (66). Pelekhaty further teaches the number of layers in a film stack with five cavities would be about 160. Pelekhaty teaches three cavities with 28 layers, if the number of cavities were expanded to five the number of layers would be 50, which in the broadest reasonable interpretation of "about 160" anticipates the claimed limitation. Pelekhaty lacks reference to the high refractive index thin film comprising indium tin oxide. Mitsui teaches the use of tin oxide including indium as a thin film light transmissive layer (col. 2 lines 27-29), and indium tin oxide is known to have a refractive index of about 2.1. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the indium tin oxide film taught by Mitsui in the Pelekhaty invention for the purpose of having a film with low resistance to light transmission and high scratch resistance.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Mitsui as applied to claim 4 above, and further in view of Goossen (US 5,914,804).

Pelekhaty in combination with Mitsui teaches the invention as claimed but lack reference to the optical thickness of the spacer layer being a multiple of a quarter wavelength. Goossen teaches a spacer layer with an optical thickness of one half wavelength (Fig. 3). One half wavelength is equal to two times a quarter wavelength. It would have been obvious to a person of ordinary skill in the art at the time the invention

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was made to have the spacer layer of Pelekhaty have the optical thickness taught by Goossen for the purpose of limiting the size of the film stack and therefore increasing the space efficiency of the optical filter.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Mitsui as applied to claim 5 above, and further in view of Adair (US 6,490,381).

Pelekhaty in combination with Mitsui teaches the invention as claimed but lacks reference to the low refractive index material being silicon or aluminum oxide. Adair teaches the use of silicon oxide (col. 6 line 46) as the low refractive index material in combination with indium tin oxide (col. 6 lines 20-21) as the high refractive index material. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the low refractive index layer of Pelekhaty comprise silicon oxide as taught by Adair for the purpose of allowing the filter to be adjustable for use in a wider range of applications.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hirabayashi (US 5,321,539) teaches the use of a Fabry-Perot etalon filter.

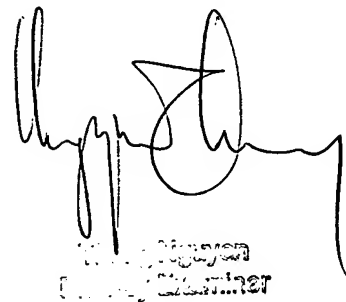
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L Pritchett whose telephone number is 703-305-7917. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JLP  
March 26, 2003



Joshua L. Pritchett  
Examiner